

REMARKS

Acknowledgement of the Finalization of the Restriction Requirement

The Examiner's finalization of the restriction requirement in the October 9, 2002 Office Action, and his withdrawal of claims 14, 15, 17 and 18 is acknowledged².

Amendment of Claims Herein

Claim 2 has been cancelled herein, and the substance thereof incorporated in claim 1 as amended.

Claim 1 has also been amended to recite, "wherein said thin gasket layer has a thickness in a range of from about 0.01 inch to not more than 0.3 inch," consistent with the definition of the term "thin" in the paragraph bridging pages 6 and 7 of the specification with reference to the maximum value of not more than 0.3 inch, and reciting the lower value of the thickness range in claim 4, as also described in the specification at page 7, line 1 thereof.

Consistent with the Examiner's withdrawal of claims 14, 15, 17 and 18 and finalization of the restriction requirement, claims 14, 15, 17 and 18 have been cancelled herein. Such cancellation is with express reservation of the right to file further application(s) directed to the subject matter of such cancelled claims, during the pendency of the present application, or a further divisional or continuing (including CIP) application based on and claiming the priority of the present application.

² Applicant desires to correct the mischaracterization in the October 9, 2002 Office Action of the basis of applicant's traversal of the restriction requirement in the response filed July 12, 2002. The October 9, 2002 Office Action states that the traversal was made by applicant "on the ground(s) that the particulars of claims 2-16 of the subcombination cannot be used as a basis for restriction" which the Examiner stated "is not found persuasive because the limitation of all of the claims are group [sic] into a whole for restriction purposes" (page 2, first paragraph of the October 9, 2002 Office Action). Applicant's July 26, 2002 response pointed out that the Examiner had based the restriction on the fact that "the combination as claimed does not require the particulars of claims 2-16 of the combination" at page 2 of the June 12, 2002 Office Action, and applicant pointed out that using this as a basis for separating the claims into three groups would mean that the claimed features of dependent claims 2-16 would have to be in claims of Groups II and III. Additionally, applicant had argued against the restriction for the principal reason of the "commonality of the cassette structure as claimed in all three [of the Examiner's restriction] groups," but the Examiner in the current action has ignored this fact and maintained his restriction on the ground that the limitations of all of the claims (presumably claims 2-16) are "group[ed] into a whole for restriction purposes." This fails to state a proper basis for the finalization of the restriction requirement, and applicant's traversal is maintained despite the Examiner's finalization of the restriction requirement.

New claim 19 has been added herein, of independent form.

Claim 19 is generally of corresponding form to claim 1 as herein amended, but recites the gasket material as comprising a silicone material (as is also recited in claim 11), and adds the limitation that the recited thin gasket layer fully encapsulates the filtration cassette (as also recited in claim 8). Accordingly, newly added claim 19 introduces no new matter (35 U.S.C. § 132 (a)).

Rejection of Claims 1-13 and 16, and Traversal Thereof

In the October 9, 2002 Office Action, the Examiner rejected claims 1-13 and 16 under 35 U.S.C. § 103(a) as unpatentable over Kopf '930 in view of Demmer et al. and/or Karbachsch et al.

Such rejection is traversed in application to the claims 1, 3-13 and 16 as amended herein, and reconsideration of the patentability of the pending claims as amended therefore is requested, in light of the ensuing remarks.

Patentable Distinction of Amended Claims 1, 3-13 and 16 Over the Cited References

In his statement of rejection of originally filed claim 1, in the paragraph bridging pages 2 and 3 of the October 9, 2002 Office Action, the Examiner has conceded that Kopf '930 lacks disclosure of the gasketing structure of the present claimed invention, but has pointed to Demmer et al.'s element 3 in FIG. 3 of such reference, and to element 90 in FIG. 2 of Karbachsch et al. as disclosure such gasketing structure in a filtration cassette.

Applicant's claim 1 as now amended requires, *inter alia*,

“at least one thin gasket layer bonded to a surface of said filtration cassette and forming an integral unitary structure with said filtration cassette, wherein said thin gasket layer comprises an elastomeric material for forming a fluid-tight seal between the filtration cassette and an adjacent structure when engaged therewith, wherein said thin gasket layer has a thickness in a range of from about 0.01 inch to not more than 0.3 inch, and comprises an elastomeric material having a durometer hardness in a range of from about 30 to about 80”

(claim 1, paragraph (b)).

No such gasketing structure is shown in either Demmer et al. or Karbachsch et al.

Demmer et al. merely describes a non-specified “durable elastic sealant 3” (column 3, line 22) and the only disclosure of thickness in such reference is that the sealant is on rim surfaces of the first and last sections “preferentially less than 100 μm on the surface of the section” (column 3, line 35)

The thickness < 100 microns taught by Demmer et al. is numerically equal to < 0.00394 inch, which therefore is at least an order of magnitude below the lowest value of 0.01 inch permitted by the present invention for the thickness of the gasket layer. Further, since there is no teaching of any specific materials for the “durable, elastic sealant” in Demmer et al., there is likewise no teaching of a gasket layer having a durometer hardness in a range of from 30 to 80 as required by applicant’s claimed invention.

Karbarchsch et al.’s element 90 cited in the Office Action is a sealing material ring, which as described at column 6, lines 8-10 of such reference “may consist of any commercially available molded materials or inelastic or elastic materials which are used for sealing purposes.” As described at column 6, lines 27-28, the annular sealing ring receives the spacers at a defined depth and the stacks of filter units and spacers therefore are accommodated within the sealing ring, and therefore the ring has a substantial thickness of 2 or 5 centimeters, as described at column 6, lines 39-42.

The thickness of 2 or 5 centimeters is numerically equivalent, in inch units, to 0.787 inch or 1.969 inches. It therefore is apparent that the dimension of Karbachsch et al.’s sealing ring is substantially in excess of and fundamentally different from applicant’s claimed thickness range of “from about 0.01 inch to not more than 0.3 inch.” Further, there is no teaching or suggestion in Karbachsch et al. of a material having a specifically delimited durometer value within the range of 30 to 80 required by applicant’s claimed invention - indeed, Karbachsch et al., in teaching to fabricate the sealing ring “of any commercially available molded materials or inelastic or elastic materials” that are processable “in a viscous state” and are “inert with respect to the unfiltered material” (column 6, lines 8-12 of Karbachsch et al.) conveys a lack of concern for any specific materials properties as being essential to the use of the sealing ring.

In this respect, applicant points out that such lack of importance of materials properties for Karbachsch et al.'s sealing ring, in contrast to applicant's claimed invention, is explainable by the fundamental differences in thickness involved. Applicant's claimed gasket layer has a thickness of "from about 0.01 inch to not more than 0.3 inch." The disclosed thickness of Karbachsch et al.'s sealing ring is 0.787 inch or 1.969 inches. The large size of the sealing ring of Karbachsch et al. and its different function in constituting a containment structure for spacer elements therefore do not raise the materials properties issues of applicant's very low thickness layer, which must be rigid enough to provide effective structural support at such very low thickness yet not be so rigid as to be susceptible to fracture or crack propagation of the thin film material under conditions of differential thermal expansion effects (relative to the associated filtration cassette elements of different materials), vibration from pumps and compressors associated with the filtration equipment, pressure forces from the fluids in the filtration cassette passages, etc.

It therefore is apparent that there is no derivative basis in either Demmer et al. or Karbachsch et al. for applicant's invention as claimed.

Claim 1 accordingly is patentably distinguished over the cited combination of references, as are dependent claims 3-13 and 16 thereunder.

The Examiner's further remarks concerning the dependent claims therefore are moot in view of the patentability of claim 1 from which such dependent claims depend, but specific remarks are set out below concerning these dependent claims.

Concerning claim 3, the Examiner has contended that providing a specific durometer for the gasket layer would be obvious "to optimize the strength of the gasket." If strength optimization of the gasket layer were the objective and criterion, the highest possible durometer value would be selected. Since materials with durometer hardness of 120 and higher are commercially available, such high strength material would be employed according to the Examiner's reasoning.

This fact itself rebuts the obviousness of the gasket layer durometer hardness values recited in claim 3, of "from about 40 to about 60."

Similarly, concerning claims 4 and 5, the Examiner has contended that providing a specific thickness of the gasket layer “would have been obvious in order to provide a proper seal for a given seal surface condition of the adjacent structure.” The fact is that the references of Demmer et al. and Karbachsch et al. teach away from the specific limited thickness range of applicant’s claims, and the Examiner’s hypothesis of a “proper seal” for a “given seal surface condition” is not based on any quantitative criteria, and provides no direction concerning specific thickness values.

There is corresponding lack of any basis for providing specific temperature resistance in the Examiner’s hypothesis of optimizing the cassette for a given application. What are the cassette parameters, and what is the correlative relationship that yields such “optimized” values? There is no art cited or any specificity to support this contention.

The statement in the Office Action concerning the full encapsulation of the cassette by the gasket layer recited in claim 8 attributes such feature to both the secondary references, but in fact neither completely encapsulates the filtration structure (Demmer et al. coats the edges - see column 3, line 21 of such reference; Karbachsch et al. uses a discrete annular sealing ring - see column 5, lines 65-69 of such reference).

The remarks concerning claims 10, 11, 12 and 13 are obviated by their dependence on patentable claim 1.

In sum, all pending claims 1, 3-13 and 16 as amended herein are patentably distinguished over the art and in form and condition for allowance.

Newly added claim 19 is likewise allowable, for corresponding reasons.

Fee Payable for Added Claim 19

In connection with the cancellation of claims 2, 14, 15, 17 and 18 herein, the addition of new claim 19 herein does not increase the number of independent or total claims beyond the numbers for which payment previously was made. Accordingly, no fee is payable for such addition of claim 19 herein.

If nonetheless it is determined that any fee is properly payable in connection with the filing and entry of this response, the same hereby is authorized to be charged to Deposit Account No. 08-3284 of Intellectual Property/Technology Law.

CONCLUSION

Claims 1, 3-13, 16 and 19 as amended/added herein, are now submitted to be in form and condition for allowance. Favorable action therefore is requested.

If any issues remain outstanding, incident to the formal allowance of this application, the Examiner is requested to contact the undersigned attorney at (919) 419-9350 to discuss their resolution, in order that this application may be passed to issue at an early date.

Respectfully submitted,



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Appendix A - Marked-Up Version of Claim 1 As Amended Herein

1. (amended) An integral gasketed filtration cassette structure comprising:

(a) a filtration cassette comprising a multilaminate array of sheet members of generally rectangular and generally planar shape with main top and bottom surfaces, wherein the sheet members include in sequence in the array a terminal end plate, a first retentate sheet, a first filter sheet, a permeate sheet, a second filter sheet, and a second retentate sheet, and a second terminal end plate, wherein each of the sheet members in the array has at least one inlet basin opening at one end thereof, and at least one outlet basin opening at an opposite end thereof, with at least one permeate passage opening;

each of the first and second retentate sheets having at least one channel opening therein, wherein each channel opening extends longitudinally between the inlet and outlet basin openings of the sheets in the array and is open through the entire thickness of the retentate sheet, and with each of the first and second retentate sheets being bonded to an adjacent filter sheet about peripheral end and side portions thereof, with their basin openings and permeate passage openings in register with one another, and arranged to permit flow of filtrate through the channel openings of the retentate sheet between the inlet and outlet basin openings to permit permeate flow through the filter sheet to the permeate sheet to the permeate passage openings;

wherein each of the filter sheets is secured at its peripheral portions on a face thereof opposite the retentate sheet, to the permeate sheet;

(b) at least one thin gasket layer bonded to a surface of said filtration cassette and forming an integral unitary structure with said filtration cassette, wherein said thin gasket layer comprises an elastomeric material for forming a fluid-tight seal between the filtration cassette and an adjacent structure when engaged therewith, wherein said thin gasket layer has a thickness in a range of from about 0.01 inch to not more than 0.3 inch, and comprises an elastomeric material having a durometer hardness in a range of from about 30 to about 80.